What is Claimed is:

1. A method of synthesizing music in a digital system, comprising the steps of:

accessing a digital analysis waveform having a first duration, a first pitch, a first attack portion and a first decay portion;

determining a second duration and a second pitch for a synthesis waveform;

computing first timing marks for the analysis waveform such that the first timing marks correspond to periodicity of the analysis waveform;

computing second timing marks for the synthesis waveform such that the second timing marks correspond to periodicity of the synthesis waveform; and

calculating samples for each period of the synthesis waveform defined by adjacent second timing marks using samples selected from a corresponding period of the analysis waveform defined by adjacent first timing marks to form the synthesis waveform having the second pitch, the second duration, a second attack portion and a second decay portion.

2. The method of Claim 1, wherein the step of calculating samples for each period further comprising the steps of:

calculating a set of samples for a period m using a first cosinous window;

calculating a set of samples for a period m-1 using a second cosinous window; and

combining the set of samples for period m and the set of samples for period m-1 using a weighting function.

3. The method of Claim 2, wherein the first cosinous window operates on two adjacent periods and the second cosinous window operates on two adjacent periods shifted by one period from the first cosinous window.

4. The method according to Claim 3, further comprising the step of reversing a selected one of the set of samples before the step of combining the sets of samples.

5. The method according to Claim 4, wherein the step of reversing is performed only when two consecutive periods of the synthesis waveform are formed using same periods of the analysis waveform; and

wherein the step of reversing is responsive to a random number generator.

6. The method according to Claim 1, wherein the step of calculating samples forms the synthesis waveform such that the second attack portion has a duration approximately equal to a duration of the first attack portion.

7. The method according to Claim 1, wherein the step of calculating samples forms the synthesis waveform such that the second decay portion is formed by time warping the first decay portion.

8. The method according to Claim 1, wherein the second pitch is selected from a range of at least plus or minus one octave around the first pitch.

9. The method according to Claim 1, wherein the step of accessing a analysis waveform selects from a plurality of instrumentally correct digital waveforms corresponding to a plurality of instruments.

10. The method according to Claim 9, wherein for at least one of plurality of instruments, the instrumentally correct digital waveforms include not more than one waveform for a range of at least two octaves.

11. A digital system, comprising:

a memory for holding a plurality of instrumentally correct digital waveforms corresponding to a plurality of instruments;

a first processor connected to the memory, the first processor operable to store a musical score in the memory; and

a second processor connected to the memory, the second processor operable to synthesize a melody signal in response to the musical score using the method according to any preceding claim for each note of the melody.

and

12. The digital system of Claim 11, further comprising an audio device connected to the second processor for playing the synthesized melody signal.

13. The digital system according to Claim 11 being a personal digital assistant, further comprising:

a display connected to the second processor via a display adapter;

radio frequency (RF) circuitry connected to the CPU; and

an aerial connected to the RF circuitry.